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Dear Marcus:

May I ask a question or two about iojap? I'm writing a review on the rather ill-defined subject of the parallelisms of extranuclear "genes" with endosymbionts (in Buchner's sense), and have no choice but to try to learn something about the obscurities of such things as plastid genetics, about which I had held only the usual naive notions until now. It seems to me rather remarkable that so little has been done on induced plastid mutations: I suppose the difficulty of rearing the more obvious kinds of mutants is the cause of it.

I was particularly struck by your comment on p. 41 of the "Unites biologiques douees..." on the persistence of the cytoplasmic conditioning through entirely green F-1 Ij/ij. This is the key to whether the cytoplasmic factor is inherited independently of the plastid, or have I mistranslated or misinterpreted the remark. If the effect persists independently of the phenotype of the plant, can you detect a difference between IjIj and Ijij in the capacity to transmit?

There is one hiatus as between the published experiments and the general conclusions, namely that the altered plastidome is inherited potentially indefinitely in an IjIj genotype. I could find a reference only to the F-2 or backcross generations, but I suppose that such plants have been selfed for a number of generations. Can one draw any conclusions as to whether plastid instability continues, or whether there is merely a continued sorting out of a mixture or restabilized components?

If you have any clarifying comments that I can quote, would you indicate this specifically? In principle, I would imagine that streptomycin-induced apochlorosis might be a useful tool for separating plastid transmission, proper, from other cytoplasm (provided that streptomycin does exert its effects directly). In Pelargonium and such plants, in particular, where plastids can be introduced with either parent (on that view) a plastid-bound modification could be detected by a simultaneous "cure" of plastid and the modification by axial treatments with streptomycin.

May I wish you and yours a very happy 1952.

Sincerely,

Joshua Lederberg